

CSCI 4707: Practice of Database Systems, Fall 2020

Case Study: New Haven Urgent Care

You have been hired to create a database for the New Haven Urgent Care. The care center is a stand-alone urgent care that is not associated with any hospital system but was created to provide affordable health care to the wider community. The current system is antiquated and needs replacing. In fact, nearly everything is still done on paper and billing has become a nightmare. Ideally, the billing department will be fully automated but for now you are only tasked with getting the information in the system for the billing department (and not worrying about the billing itself.) The administrators of the urgent care want to ensure that proper billing is performed and that patient records are maintained in an efficient and effective manner. After speaking with a number of employees of the urgent care including administrators, clerks, and medical providers you have determined the following business requirements are needed:

- Patient: A person who is treated at the urgent care facility.
 - Each patient has a unique patient identifier (PID), full name, address, phone number(s), emergency contact information, dob, and insurance information.
 - If the patient is under the age of 18, parent/guardian information must be maintained. A parent or guardian is only created and tracked if there is a patient needing to have this information. It is possible a parent could be a patient also but we need to keep patient information separate from parent information since the parent information is needed for legal reasons.
- Insurance Providers: An insurance company that provides coverage for a patient.
 - Many patients that will be seen have insurance but not all will have insurance.
 - An intake clerk collects all information from the patient by requesting their insurance card and inputting their information in the database.
 - If a patient comes into the urgent care multiple times, it is possible the insurance information can change. Each visit will have its own insurance record created. The insurance record must be associated with the visit itself. We do not store insurance information and update as needed if there are multiple visits. We collect that visit's information at the time of the visit.
 - If a patient does not have insurance, it must be recorded as "NO INSURANCE."
 - Copays are collected at the time of service and may be paid for by credit card only.

- Uninsured patients are required to pay for office visit at the time of the patient registration. If uninsured, the additional costs of the visit (e.g. labs, etc) are billed via mail.
- We collect either the Copay for insured patients or the office visit cost for uninsured patients at the time of the patient registration only. All other costs are billed to the insurance or to the patient via mail (i.e. uninsured patients.)
- Service Provider: A patient is be seen by a doctor or a physician assistant (both known as the service provider).
 - Nurses always assist the service provider during the visit.
 - Nurses are identified by a unique ID, full name, and unique social security number.
 - One nurse will assist with each visit.
 - A nurse is NOT a service provider.
 - A service provider is identified by a unique service provider ID, full name, and a unique social security number.
 - We do need to know what nurse assisted with the visit.
- Diagnosis: A patient needs to have a diagnosis logged by the service provider; the nurse cannot do this. The International Classification of Diseases (ICD) is used to identify the diagnosis/diagnoses. The ICD-10-CM is used to code the patient's condition. Each diagnosis is coded with the ICD-10-CM code and name.
- Treatment: Patients are treated onsite and may have additional tests/procedures ordered that are completed (e.g. lab work, x-rays). These are performed at the urgent care facilities.
 - The ICD-10-PCS codes are used to account for these treatments.
 - Each test/procedure is identified by its ICD-10-PCS code, name, and the cost of the test/procedure at the urgent care facility.
 - If the patient is a minor, then a form is approved by the parent or guardian and the test/procedure is updated as approved in the system. We need to document the approval and store the electronic approval form in the system.
- Employees: All employees of the care center that are involved in data collection for a patient must be identified by an unique ID, ssn, and full name.
 - Intake clerks take insurance information and copay or initial payment.
 - Doctors enter diagnoses and request tests/procedures.
 - Nurses take the vitals and assist the doctor.
- Initial Assessment: An initial assessment must be performed for each patient.
 - The patient's vital records are collected by a nurse. This is performed for each patient. We collect the height, weight, blood pressure, and pulse.
 - The initial assessment needs to have the nurse's id on it. Each assessment can be for only one patient and only one nurse can

complete the assessment. The nurse's id must listed on the assessment.

- Current medications are also collected along with any known allergies.

Additional Notes:

- A patient is initially seen by the intake clerk. They collect the insurance information of the patient and collect copays or initial office visit payment. They also record the parent/guardian information if the patient is under the age of 18.
- After intake, the patient's vital records are collected by a nurse. The patient's height, weight, blood pressure, temperature, and medical condition description is collected (e.g. symptoms). In addition, all medications are listed along with known allergies. This is the initial assessment. Each visit we must collect this information. We do not keep a single record of medications and allergies. We collect and document this information for each visit.
- There must be at least one diagnosis. A patient can have multiple things wrong so there can be multiple diagnoses for a visit.
- A visit record consists of all of the information captured for that one patient for that one visit.